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~~UNCLASSIFIED~~ - INFORMATION ON SOVIET
BLOC INTERNATIONAL GEOPHYSICAL COOPERATION
-1960

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INFORMATION ON SOVIET BLOC INTERNATIONAL GEOPHYSICAL COOPERATION - 1960

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INFORMATION ON INTERNATIONAL GEOPHYSICAL COOPERATION --

SOVIET-BLOC ACTIVITIES

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I. ROCKETS AND ARTIFICIAL EARTH SATELLITES

Braking of Satellites Directly Related to Solar Activity

For some time it has been observed that satellites brake at an uneven rate; instead of progressively decreasing their period of revolution there have been unexplained increases in the period. It has now been discovered that there is a direct correlation between the braking of these satellites and activity on the Sun.

Observations of the braking of satellites and their rocket-carriers has made it possible to make still another interesting discovery: it appears that in addition to irregular sharp "jumps" there is a periodicity in the density of the atmosphere (a 28-day cycle). This is directly related to the Sun's 28-day period of rotation which is also responsible for the 28-day cycle in the Earth's magnetic field, cosmic rays, condition of the ionosphere, auroras, etc. ("On the 'Boundary' of the Air Ocean," by Engineer B. Stepanov, *Nauka i Zhizn'*, No. 7, 1960, pp. 68-69)

Pressure Exerted by Light Capable of Moving Space Vehicles

A single-page article in a recent issue of *Znaniye-Sila* discusses a new type of space vehicle which offers great possibilities. The pressure of light has long been known to move space particles for great distances and to play an important role in many cosmic processes. The problem of how to use this energy in cosmonautics has been discussed by both American and Russian specialists. At least theoretically it would appear to offer the possibility of moving space vehicles. The author likens such a vehicle to a sailing ship which moves under the influence of an external force rather than by its own engine.

Such a vehicle could even move in the direction of the Sun, even as sailing vessels can move forward against the wind. ("With Solar Sails," by A. Shibanov, *Znaniye-Sila*, No. 9, 1960, p. 22)

Soviet Scientist Expresses His Opinion of American Space Research

B. S. Danilin, writing in the Soviet popular science journal *Nauka i Zhizn'* for July 1960, reviews the successes achieved by the Soviet Union in rocketry and space research and then discusses various aspects of the difficulties still to be overcome in the winning of space by man.

The author includes a strongly-worded indictment of the United States space research program. The following statements are representative of the general tenor of his remarks:

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"Although none of their rockets have yet reached the surface of the Moon...they are devising plans for the construction of military bases there. In the opinion of American 'specialists' the crevasses and craters of the Moon will be excellent cover for rocket launching pads for firing missiles at any part of the Earth's surface."

"More and more new American satellites are appearing. They are equipped with many instruments and are capable of executing a wide program of measurements, including observations during flights over the territory of the Soviet Union at elevations of 170 to 180 km, relatively low for satellites. However, the United States reports nothing about the program covered by these observations and does not report the frequencies on which the radio transmitters operate nor any other information which would enable anyone to make observations of these satellites. In response to inquiries by Soviet scientists, they usually respond that these satellites are not intended for geophysical research. If this is true, what kind of research are these satellites conducting as they fly over Soviet territory?"

"The capitalist world grinds in the mud the brightest dream of humanity -- flight by man to unknown worlds. The Socialist world, headed by the Soviet Union, is blazing for humanity a path to a bright future...." ("The Great Road Ahead," by B. S. Danilin, *Nauka i Zhizn'*, No. 7, 1960, pp. 8-10)

Meteorological Stations in Space

A recent issue of Nauka i Zhizn' carries a four-page article on the subject of the use of space vehicles for collection and reporting of meteorological data. In reality, however, the first two pages are only an introduction to the main theme.

The author states that it is already fully feasible from a technical viewpoint to use satellites to determine the character and intensity of the cloud cover covering the Earth, the temperature of its land surface, the amount of solar energy reaching our planet, and other meteorological indices. For effective coverage of the Earth, however, it would be necessary to have a great many such meteorological satellites in service.

These satellites will be able to study the wandering of the poles, believed to exercise a substantial influence on the general circulation of the atmosphere.

But observation of the Earth will be only half the job -- observations of the Sun will be an equally important mission for meteorological satellites. The Sun is the all-important determinant of terrestrial weather and due to the presence of our atmosphere the Sun can be studied better from the boundaries of the atmosphere rather than from the Earth's surface.

Even the vast amount of data which will be supplied by these satellites would be unusable if it were not for the invention of the electronic computer. Only the use of the latter makes it possible to make

a speedy analysis and collation of the collected data. One of these specialized machines is the "Pogoda" computer of the Central Institute of Weather Forecasts. It performs 200 operations per second -- over a million operations in approximately two hours.

Nevertheless, states the author, such rapid, precise and long-range forecasts as we visualize to be possible cannot be achieved without close collaboration among the scientists and meteorologists of many countries. ("Cosmic Meteorological Stations," by N. Varvarov, Nauka i Zhizn', No. 7, 1960, pp. 17-20)

Hungarian Evaluates Second Soviet Space Ship

The high points of an article by Erno Nagy, Secretary of the Hungarian Space Navigation Society, in which he discusses the second Soviet space ship follow.

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"The almost completely circular orbit of the $4\frac{1}{2}$ -ton second Soviet space ship is an exceptional achievement in guidance technology. By ensuring an accuracy of this degree it will be possible to solve all space research problems within the next 5 years.

"The booster rocket of Sputnik V was not just an ordinary rocket. A satellite carrying only instruments can be permitted much greater acceleration than one carrying animals. This is because despite all training, the basic physiological make-up of Strelka and Belka had to be taken into consideration in programming the flight pattern of the booster rocket and the return of the capsule.

"It can be assumed that other satellites similar to Sputnik V will be launched, because only these and ballistic rocket launchings will provide the data necessary for recovering a man from space. Academician Blagonravov at the congress in Stockholm repeatedly emphasized to me that the first space traveller would be subjected to no unnecessary risk. The Soviet space research team is not aiming for propaganda and publicity, but for absolute dependability.

"Sputnik V yielded valuable data on space biology through its unusually clear and accurate television pictures of biological processes in space.

"There is no doubt after this that the Soviets will be the first to recover a man from space, simply because they already have a suitable booster rocket and will be the only nation to have such a rocket till at least 1962. The Venus rocket of Von Braun will not be ready to launch and recover humans till 1963, and in the interim, the Soviet rocket engineers will make still further progress."

("From Space to Earth," by Erno Nagy, Secretary of the Hungarian Space Navigation Society; Budapest, Technika, Vol. IV, No. 9, September 1960, p. 3)

11. UPPER ATMOSPHERE

Conference on Meteorites Held at Kiyev

The Ninth Conference on Meteorites was held in Kiyev from the second through the fourth of June. The meeting was sponsored by the Committee on Meteorites of the Academy of Sciences of the USSR.

By tradition, the conference was opened by the Chairman of the Committee on Meteorites, V. G. Fesenkov. In his overview of this subject he devoted particular attention to the form of meteoric bodies in interplanetary space. He discussed the character of their surfaces and whether there was a difference in the nature of the surfaces of those which arise as a product of the disintegration of asteroids or the disintegration of comets. He reported that spectral analysis fails to reveal a difference.

A special session of the conference was devoted to a discussion of the circumstances surrounding the falling of the Tunguska meteorite. Research on this matter has entered a new stage in recent years. In 1958 the Committee sent an expedition into the area. In view of the absence of traces of a surface explosion, the conclusion has been drawn that the explosion of the meteorite occurred in the air. Additional information from foreign sources on anomalous optical phenomena in the atmosphere, observed immediately after the falling of the Tunguska meteorite, has provided important new data on the limits of dissemination of these phenomena.

Theoretical research has confirmed the probability that the meteorite exploded in the atmosphere, provided that it constituted the nucleus of a comet. This explains the absence of a crater at the site. Researchers have determined the most probable initial and final velocities for the meteorite, its mass and energy. Fesenkov pointed out that all the principal data indicate that the Tunguska meteorite was the nucleus of a small comet which collided with the Earth.

The conference agreed on the necessity of proceeding with research on this subject and that research should be conducted to develop a theory of the motion of large meteoric bodies in the Earth's atmosphere and the mechanism involved in their destruction. Moreover, there should be additional discussion of the hypothesis of the cometary nature of the Tunguska meteorite, simulation of its phenomena of motion and explosion above the Earth's surface, and experimental reproduction of the assumed mechanisms of the explosion. It was decided to send a new expedition into the area in 1961. This year (1960) a small detachment will be sent to collect soil samples.

Conferees discussed the problem of dissemination in the press of fantastic notions disguised as "scientific hypotheses," for example, that the Tunguska catastrophe of 1908 was caused by the atomic explosion of a spaceship. They agreed that such theories, presented as "scientific hypotheses," result in great damage to the dissemination of scientific knowledge.

At a number of sessions the results of the study of chemical and physical structure of meteorites were discussed. It was pointed out that it is important that there be an understanding of the influence of cosmic radiation on meteoric bodies. It is known that as a result of this radiation stable and radioactive isotopes of various chemical elements are formed in meteorites, including isotopes with a short life-time. This makes it possible to determine the cosmic age of meteorites, that is, the length of time which they have travelled in interplanetary space as independent bodies. ("The Study of Meteorites," by Ye. L. Krinov, Vestnik Akademii Nauk SSSR, No. 9, 1960, pp. 113-115)

The Problem of Constructing a Model of the Atmosphere

A. D. Bolyunova of the Institute of Physics of the Atmosphere is the author of a recent 4-page article on the problem of construction of a model of the atmosphere. This paper provides a critical comparison of various measurements of structural parameters of the upper atmosphere. It is emphasized that we can use the fact that the flux of heat above 250 km as a result of thermal conductivity can be either constant or decrease with height as a criterion for evaluation of the true distribution of temperature. ("On the Problem of Constructing a Model of the Atmosphere," by A. D. Bolyunova, Izvestiya Akademii Nauk SSSR, Seriya Geofizicheskaya, No. 10, 1960, pp. 1529-1533)

Research Paper Analyzes Lyman-Alpha Radiation in the Atmosphere

The most recently received issue of the Izvestiya of the Academy of Sciences of the USSR (Geophysical Series) carries an article dealing with the absorption of Lyman-alpha radiation in the Earth's atmosphere. The author is a worker at the Institute of Applied Geophysics. He concludes that Lyman-alpha radiation is absorbed by atomic hydrogen and lists four reasons justifying his evaluation. ("On the Absorption of $HL\alpha$ -Solar Radiation in the Earth's Atmosphere," by V. V. Katyushina, Izvestiya Akademii Nauk SSSR, Seriya Geofizicheskaya, No. 10, 1960, pp. 1549-1552)

III. METEOROLOGY

Lightning Research Laboratory Established in the Azerbaydzhan SSR

The development of effective measures to protect power lines and other such structures against lightning is being emphasized now in the USSR due to the serious losses which have been constantly sustained. Improvement cannot be brought about because of faulty and inadequate data and erroneous ideas concerning the mechanism involved in a lightning discharge. In addition, research in the laboratory suffers a great number of inadequacies; investigation of this phenomenon should be carried on under natural conditions.

A research institution has therefore been established on the grounds of the Shemakhinskaya Observatory at an elevation of 1,500 m above sea level. Three metal masts have been erected, each 20 m high. A metal tower 4.5 m high has been erected on the roof of the laboratory for the setting up of optical instruments and for visual observations. An extensive program has been worked out for investigation of thunderstorm processes and methods for measuring and recording them. The following matters will be investigated, listed in order of descending priority: (1) study of the formation of thunderstorm clouds and their electrical characteristics, in conjunction with all associated electrical processes in the atmosphere; (2) study of the mechanism of the development of the discharge; (3) investigation of the parameters for a direct impact of lightning; (4) collection of data on the intensity of thunderstorm activity. ("Initiation of Complex Investigation of Thunderstorm Processes in the Azerbaydzhan SSR," by A. S. Alizade, Izvestiya Akademii Nauk Azerbaydzhanskoy SSR, Seriya Fiziko-Matematicheskikh i Tekhnicheskikh Nauk, 1960, No. 2, pp. 101-106)

Silver Iodide Used to Prevent Disastrous Hail Storms in the Caucasus Area

Hail is a feared enemy of the viticulture industry in the Caucasus area. This meteorological phenomenon has often wiped out the entire grape crop over extensive areas.

Silver iodide has proven to be a potent weapon in combatting the formation of hail. On being charged into suspicious clouds the particles of silver iodide facilitate the formation of small crystals of ice which quickly increase in size to snowflakes. The snow, on falling earthward, passes through warm layers of the atmosphere and is transformed into rain. The theory has been good, but until recently there was no feasible way to introduce the substance into the clouds. Aircraft could not be used in this ruggedly mountainous area. Balloons were tried but did not work; they were quickly blown away by the wind.

It was then decided that the clouds could be seeded with special rockets. The first attempts have proven successful and give hope that in time the danger of hail will be fully eliminated. ("Rockets and Grapes," unsigned article, Sovetskiy Soyuz, No. 6, 1960, p. 24)

The Influence of Cosmic Dust on Certain Actinometric Characteristics of the Atmosphere

An 11-page article by workers at the Institute of Applied Geophysics examines the influence of cosmic dust and the products of disintegration of meteors on the actinometric characteristics of the atmosphere. This paper cites the results of many years of actinometric observations; these are used in computations of the principal characteristics. ("On the Degree of Influence of Cosmic Dust on Several Actinometric Characteristics of the Atmosphere," by A. A. Dmitriyev, M. I. Mishina, A. Ye. Mikirov and Ye. P. Cherenkova, *Izvestiya Akademii Nauk SSSR, Seriya Geofizicheskaya*, No. 10, 1960, pp. 1518-1528)

The Ionization State of the Free Atmosphere Under Anticyclonic Conditions

A group of workers at the Institute of Applied Geophysics have published the results of their measurement of the ion spectrum of the free atmosphere in a period of stable anticyclonic weather. Their article is accompanied by graphs showing the spectrum of light ions for heights between 300 and 5,000 m, collected during 10 flights. On the basis of this data they have tentatively determined the distribution of the density of light ions, the conductivity of the air, the mean mobility of ions, and the coefficient of unipolarity for these same heights. On the basis of the data collected during the individual flights an analysis has been made of the dependence of the indicated characteristics on several meteorological factors. ("Measurements of the Ionization State of the Free Atmosphere Under Anticyclonic Conditions," by N. N. Komarov, M. D. Kuz'menko, and A. A. Seredkin, *Izvestiya Akademii Nauk SSSR, Seriya Geofizicheskaya*, No. 10, 1960, pp. 1534-1540)

Content of Articles on Meteorology in the Latest Issue of "Meteorologiya i Gidrologiya"

Brief mention is made below of three articles of interest to meteorologists which appear in the latest issue of the journal Meteorologiya i Gidrologiya, No. 10, 1960.

- (1) "Experimentation With the Forecast of the Mean Monthly Values for 500-mb Charts," by G. I. Morskoy, pp. 9-13.

Systematic compilation of forecasts of mean monthly height of the baric field has not yet been initiated in the Soviet weather service, although the value of such forecasts is obvious. Nevertheless, not all the problems involved in such forecasts have been settled. Morskoy, in his article, provides a discussion on certain theoretical problems involved in making these forecasts.

(2) "Determination of Analogy Between the Fields of Meteorological Elements by Means of the 'Pogoda' Electronic Computer," by N. I. Zverev and D. A. Ped', pp. 14-18.

The authors of this article have endeavored to devise a way to facilitate (and automate, insofar as possible) the task of the forecaster who must often leaf through a very great number of charts to find an analog. The use of the "Pogoda" electronic computer, they report, makes it possible to quickly find an analog and determine the geometric and kinematic similarity of processes or fields which can have definite prognostic significance.

This article does not describe the program for general use in the "Pogoda," as this has been described in some detail in an article by Potiyevskiy in issue 8 (1958) of Meteorologiya i Gidrologiya. Nor does it have as its purpose the solution of the problem of the use of analogs for forecasting of circulation or weather.

(3) "On the Role of Dynamic Turbulency in the Development of Convection," by N. I. Novozhilov, pp. 27-29.

In the author's opinion, the part played by turbulent exchange in the process of convection has never been fully explained. He makes a modest contribution to clarification of this problem.

IV. GRAVIMETRY

A New Type of Thermostat for Use with Gravimeters

In determinations of the acceleration of the force of gravity by gravimeters, the accuracy of measurements to a considerable degree depends on the quality of the thermostat used. Therefore the manufacture of a thermostat which would maintain inner temperature at a more constant level would considerably increase the accuracy of such measurements. Such a thermostat has been designed, fabricated and tested in the Aerogravimetric Laboratory of the Institute of Physics of the Earth of the Academy of Sciences of the USSR. It is described in some detail in the article cited below.

("Thermostat with Constant Regulation," by V. A. Tulin, Izvestiya Akademii Nauk SSSR, Seriya Geofizicheskaya, No. 10, 1960, pp. 1499-1503)

V. OCEANOGRAPHY

Computation of the Area of the Ocean Under the Influence of Wave Action

The area of the ocean surface varies, depending on the presence or absence of waves and the extent of this wave action. Knowledge of this change is important in determining values for evaporation, heat absorption, etc.

The article cited below provides a formula which makes it possible to determine the change in the area of the ocean surface, depending on the length and height of the wave.

The area of the ocean surface with wave action between categories 4 and 5 will exceed the area of a calm surface by approximately 2.2%. ("Computation of Increase in the Area of the Ocean Under the Influence of Wave Action," by O. A. Vladimirov, Meteorologiya i Gidrologiya, No. 10, 1960, pp. 36-37)

Erroneous Procedures in Determining Wind Direction and Velocity Over the Sea

For the time being shipboard observations are the only source of information on the distribution of the wind over the open sea. However, there are many shortcomings in current practice in making such observations. These include a very rough evaluation of the direction of the apparent wind -- estimated by observing a flag or smoke. These unscientific methods result in an error which averages about 15° to 30°. Visual observations should be replaced by instrumental determinations.

Investigation of the accuracy of the frequently used hand induction anemometer (ARI) show that the readings are of a too subjective nature -- errors of as much as 2 meters per second are common in comparison with the officially authorized hand anemometer. This problem has not been solved, nor has the element of wind gustiness been fully and correctly taken into account.

Radar sets have proven effective in meteorological observations, but they must be in the proper position on the vessel. Wind observations are distorted by the vessel's superstructure and hull, and the radar apparatus must therefore be situated so as to avoid this. Radar sets for wind observations on Soviet research vessels have almost consistently failed to take this into account; it requires immediate and decisive rectification. The author offers several proposals to correct this situation. ("Several Problems on Methods of Wind Measurement Over the Sea," by A. I. Sorkina, Meteorologiya i Gidrologiya, No. 10, 1960, pp. 45-47)

Soviet Expedition Visits Easter Island

The Soviet research vessel Ob' visited Easter Island two years ago. A. V. Zhivago, Candidate in Geographical Sciences, is the author of a six-page, well-illustrated article on this visit in a recent issue of Nauka i Zhizn'.

Oceanographic observations were made near the island. Bottom samples were taken and the ocean floor was mapped. The ocean bottom around the island is made up of coarse volcanic sand with an admixture of fragments of dark tuff and broken shell. The shelf on which this volcanic island sits has a total width of about 6 miles and the water has an average depth of 120 meters. To the east of the island there are many underwater volcanoes whose peaks lie only 500 to 700 m beneath the surface of the ocean. Easter Island is the only part of this entire volcanic range which rises above the surface of the sea. The freshness of the landforms on the ocean floor and the presence of great masses of volcanic glass and ash in the uppermost horizons of the deposits provides evidence that volcanic processes on the bottom are still continuing. At various depths near the island the researchers also discovered a surface of block lava which was almost bare of any sediments.

("On Easter Island," by A. V. Zhivago, Nauka i Zhizn', No. 7, 1960, pp. 44-49)

VI. SEISMOLOGY

Abstracts of Articles on Seismology Appearing in the "Izvestiya" of the Academy of Sciences of the USSR (Geophysical Series), No. 10, 1960

The most recently received issue of Izvestiya Akademii Nauk SSSR, Seriya Geofizicheskaya, No. 10, 1960, contains five articles of interest to seismologists. The first four are listed below with translations of their Russian abstracts. The fifth is translated in full in the article following.

- (1) "Problems in the Theory of the Long-Period Vertical Seismometer," by V. T. Arkhangel'skiy, pp. 1432-1441.

This paper examines the theory of suspension of the pendulum for a vertical seismometer. It cites the principal terms in an equation for the motion of the pendulum which cause it to be unstable when there is an increase in its period.

- (2) "On the Dispersion of Long-Period Love Waves in the Continental and Oceanic Crust Along the Path Indonesia-Crimea," by I. I. Popov, pp. 1458-1462.

This article gives the results of experimental long-period surface waves used for the study of the structure of the Earth's crust using data recorded at several seismic stations.

- (3) "The Structure of Microseisms and Methods of Determining Directions to the Sources of Their Formation," by F. I. Monakhov and N. A. Dolbilkina, pp. 1463-1465.

Until recently information on the structure of microseisms was limited to qualitative aspects -- such as being surface waves, predominantly of the Rayleigh type. A quantitative analysis of the structure of microseisms was first made by the authors of this article and by Strobach, but the results differ.

Azimuthal and stereoscopic observations do not provide a correct idea of the mechanism of formation of microseismic variations or about the degree of influence of interference on the character of the microseisms. Therefore the authors conducted synchronous azimuthal and profile observations near Moscow in the fall of 1958. Ten cases of recorded microseisms were selected and analyzed. This article represents the results of this investigation.

- (4) "The Use of a Seismograph with Two Galvanometers for Simultaneous Recording of Earthquakes at Two Levels of Sensitivity," by A. G. Moskvina and N. V. Shebalin, pp. 1474-1478.

The contents of this 5-page article are clearly and accurately conveyed by the title. The instrument discussed has been successfully used at the "Simferopol'" seismic station. The article describes the mechanical structure of the apparatus and evaluates its performance.

Meeting of the Council on Seismology of the Academy of Sciences

A routine (the seventeenth) session of the Council on Seismology of the Academy of Sciences of the USSR was held between 4 and 12 April 1960 at the Institute of Physics of the Earth of the Academy of Sciences of the USSR. The following problems were discussed: 1) the seismic regionalization of the territory of the USSR; 2) the detection of underground explosions; 3) the development of the seismic service of the USSR.

As is well known, problems relating to seismic regionalization were examined in detail at a session of the council in 1958. At that time a large number of scientific reports were delivered and discussed. (See Izvestiya AN SSSR, Seriya Geofizicheskaya, No. 8, 1958 (News Events); Dulleten' Soveta po Seismologii AN SSSR, No. 8, 1960.) The session of 1960 was devoted primarily to the organizational side of this problem, in connection with the need for compiling a new map of the seismic regionalization of the territory of the USSR in 1963.

The following communications were delivered at the session by representatives of various Academies of Science: Ukrainian SSR -- O. I. Yurkevich; Georgian SSR -- A. D. Tskhakaya; Armenian SSR -- B. K. Karapetyan, A. G. Nazarov and S. A. Piruzyan; Turkmen SSR -- O. N. Korostin; Tadzhik SSR -- V. N. Gayskiy; Uzbek SSR -- Ye. M. Butovskaya; Kirgiz SSR -- Ye. A. Rozovaya; Kazakh SSR -- E. M. Antonenko. Reports were also delivered by: V. P. Solonenko and A. A. Treskov of the East Siberian Geological Institute of the Siberian Division of the Academy of Sciences of the USSR; V. N. Aver'yanovaya of the Sakhalin Kray Scientific Research Institute of the Siberian Division of the Academy of Sciences of the USSR; V. M. Kochetkov of the Yakutian Branch of the Academy of Sciences of the USSR and I. I. Popov of the "Simferopol'" seismic station concerning the status and program of work for the period 1960-1962 for refinement of the seismic regionalization of the areas of their own republics and oblasts. There was also a report by S. V. Medvedev, a representative of the Institute of Physics of the Earth of the Academy of Sciences, on the compilation of a map of seismic regionalization for the entire territory of the USSR. The session stipulated that seismic regionalization of the territory of the Russian Soviet Federative Socialist Republic is to be accomplished in the period 1960-1962 by the Institute of Physics of the Earth and the institutes of the Siberian Division of the Academy of Sciences of the USSR. The territory of the remaining union republics will be handled by the corresponding Academies of Science of the various republics, in a number of cases with the collaboration of the Institute of Physics of the Earth of the Academy of Sciences of the USSR. The map of seismic regionalization of the territory of the USSR will be drawn up by generalization of regional maps. The session discussed and adopted the recommendations made by S. V. Medvedev on the procedures for conducting this work of seismic regionalization. These recommendations enumerate the principal research procedures for collection, analysis and generalization of seismological and geological data necessary for the completion of maps of seismic regionalization.

The reports of V. I. Bune and S. A. Zakharov (Academy of Sciences of the Tadzhik SSR) "Experimentation with Seismic Regionalization in the Basin of the Vakhsh River" and V. I. Bune and V. M. Reyman (Academy of Sciences of the Tadzhik SSR) "On the Seismotectonic Characteristics of the Stalinabad - Obigarm - Sangtuda Region" reflect the results of important work on the seismic regionalization of the area in which the Vakhsh Hydroelectric Station (the largest in Central Asia) is situated (under construction). This has resulted in the compilation of a map of seismic regionalization at a scale of 1:500,000. A series of systematic investigations were made at the same time, in particular, a quantitative evaluation of the correlation of seismic foci with local tectonic structures (explosions). A report was also delivered by V. A. Aprozov (Moscow State University) "Recent Structural Geology of the Central Parts of the Western Sayan, the Tuva Basin, and the Tannu-Ola."

The problem of detection of underground explosions was discussed in reports by V. I. Keylis-Borok, I. P. Pasechnik, and Yu. V. Rishnichenko, participants in the work of the Geneva Three-Power Conference on the Banning of Tests of Atomic Weapons. The authors of the reports informed their audience in detail of the progress, status, and possible future happenings in the negotiations on the development and use of seismic methods of control of underground testings of nuclear weapons.

The session reviewed the progress in the implementation of the resolutions adopted in 1959 on the problem of the development of the seismic service of the USSR. Communications on this subject were read by Ye. F. Savarenskiy, D. P. Kirnos, Ye. A. Koridalin, S. L. Solov'yev, A. A. Treskov, A. S. Yavorskiy and others. Mention should be made of the nonimplementation of the plan of development for seismic stations in Siberia and in the Far East and the unfavorable status of the seismic service in Azerbaydzhan. The council established a Commission on the Seismic Service headed by I. I. Popov, confirmed the plan for opening of new seismic stations in the USSR in the period 1960-1963 and a list of the representative equipment for a station.

Reports were heard from V. N. Tabulevich and G. D. Panasenko concerning earthquakes which have occurred at Makhach-Kala and on the Kola Peninsula.

A series of communications delivered at the session were devoted to the problems of international cooperation among seismologists. G. P. Gorshkov (Moscow University) related about his work over a period of years as a UNESCO expert in Burma. He presented a draft of a seismic regionalization of Burma which he has compiled. D. P. Kirnos reported on the results of an excursion of Soviet specialists to Japan for the purpose of familiarization with the operation of the tsunami service. Ye. F. Savarenskiy reported on the results of a session of the European Seismological Commission in 1959 at Alicante (Spain). F. I. Monakhov communicated the results of his familiarization with the operation of seismological and geophysical establishments in Yugoslavia.

A resolution was adopted to the effect that the next field session of the council in Yerevan in the fall of 1960 should be devoted to problems of engineering seismology. ("Session of the Council on Seismology," by S. L. Solov'yev, Izvestiya Akademii Nauk SSR, Seriya Geofizicheskaya, No. 10, 1960, pp. 1510-1511)

New Book

Interpretatsiya seysmicheskikh hodografov (Interpretation of Seismic Hodographs)

Bogdanov, A. I.

Gostoptekhizdat (State Scientific and Technical Publishing House of the Petroleum and Mineral-Fuel Industry), Moscow, 1960, 289 pages.

The book contains generalized and systematized materials on the theory of seismic hodographs and their interpretation for homogeneous, bedded and continuous strata covering reflecting and refracting boundaries.

The solution of the direct and inverse problem for any configuration of a boundary of separation and for all types of hodographs is given in some cases. In other cases, in particular for bedded media, a solution is given for a plane boundary or only for linear longitudinal hodographs.

The book is intended for engineers, technical workers, and those engaged in seismic prospecting. It can be useful to instructors of higher and middle scientific institutions, which specialize in seismic methods of prospecting. ("New Books"; Moscow, Geologiya--Nefti i Gaza, No. 9, 1960, p. 64)

VII. GLACIOLOGY

Glaciological Conference Held at Baku

The First Transcaucasian Scientific Conference on the Snow Cover, Avalanches and Glaciers of the Caucasus was held in Baku in March 1960. It was called through the joint efforts of the Tbilisi Scientific Research Hydrometeorological Institute, the Institute of Geography of the Academy of Sciences of the Azerbaydzhan SSR and the Administration of the Hydrometeorological Service of the Azerbaydzhan SSR.

The participants not only included scientists from Azerbaydzhan and Georgia, but visitors from Moscow, Leningrad, Rostov-on-Don, Tashkent, Nal'chik, and others.

Forty papers were delivered. The conference was opened by Sh. A. Azizbekov, Academician of the Azerbaydzhan Academy of Sciences.

The following subjects were covered: the need for close cooperation between all workers engaged in glaciological study in the USSR; the status of such study in the Caucasus area; the geographical distribution and formation of these phenomena in the Caucasus; avalanches -- their distribution and ways of preventing them; the work of the El'bruz Expedition; observational methods for glaciers and snow cover; glacial and snow data used for hydrological forecasts; the influence of snow cover and glaciers on runoff and the use of melt water for agricultural purposes; circulation of the atmosphere over the Caucasus; the ice regime of the Caspian Sea; glaciological research in Antarctica during the IGY.

The following measures were recommended: the generalization and publication of glaciological data; an expansion of the scope of hydro-meteorological observations in experimental and typical river basins; the establishment of new hydrometeorological stations near the foot of glaciers in the Caucasus; the setting up of a glaciological station in the vicinity of Mount Kazbek.

("Conference on the Study of the Snow Cover and Glaciers of the Caucasus," by G. N. Khmaladze, Meteorologiya i Gidrologiya, No. 10, 1960, pp. 64-65)

VIII. ARCTIC AND ANTARCTIC

Sledge-Tractor Train Enroute from Mirnyy to Vostok

CPYRGHT

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"The Main Administration of the Northern Sea Route has received a report that a sledge-tractor train departed from Mirnyy Antarctic observatory for the interior station of Vostok on 24 October.

"This trek is being made by 10 polar specialists headed by the chief of the train, Krausnikov." ("Into the Heart of the Ice Continent," unsigned article, Pravda, 27 October 1960, p. 4)

Soviet Pilot Makes 200th Landing on the Drift Ice

The following news dispatch is signed by Blinov, chief of the drift station "SP-8."

CPYRGHT

"Severnyy Polyus-8 Station, 25 October. Yesterday the famed Soviet polar flier Il'ya Pavlovich Mazuruk landed his aircraft on the ice floe of the Severnyy Polyus-8 drift station. This was his 200th landing on the drift ice of the Arctic Ocean. Mazuruk made his first landing on the ice in May 1937. Twenty-four years have now passed in which Mazuruk has been constantly flying in the high latitudes of the Arctic." ("Anniversary Drift," Pravda, 26 October 1960, p. 6)

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The Influence of the Albedo on the Radiation Regime in the High Latitudes

A single-page article recently appearing in Meteorologiya i Gidrologiya discusses the influence of the albedo of the underlying surface on the radiation regime in the Arctic and Antarctic. The author contends that there is a failure to correctly understand the character of this phenomenon. ("On the Problem of the Influence of the Albedo of the Underlying Surface on the Radiation Regime Under Arctic and Antarctic Conditions," by K. Ya. Kondrat'yev, Meteorologiya i Gidrologiya, No. 10, 1960, pp. 29-30)

Biographic Notes on the Soviet and Bloc Meteorologists Lost in the Mirnyy Fire

A fire destroyed the aerometeorological building at the Soviet Antarctic station Mirnyy on 3 August 1960. The following eight personnel perished in the tragedy:

Oskar Grigor'yevich Krichak, 49, Senior Scientific Worker at the Central Institute of Forecasts, was chief of the aerometeorological detachment at Mirnyy. He had been chief of the weather bureau of the Administration of the Hydrometeorological Service of the Ukrainian SSR and first director of the Central Institute of Forecasts. He was a meteorologist at the Karelian front during World War II. He also served a long

period as deputy chief editor of "Meteorologiya i Gidrologiya." He himself has written more than 30 scientific works, most of which have been published; these include a textbook entitled "Synoptic Meteorology."

Anatoliy Mikhaylovich Belolikov, 29, was a forecaster at Mirnyy. His only previous assignment after graduation had been as a forecaster at the Leningrad weather bureau.

Aleksey Lent'yevich Dergach, 37, a specialist at the Main Geophysical Observatory, was a meteorologist at Mirnyy. He had served six years in the Red Army as a pilot and mechanic. He had earlier participated in an expedition to the Taymyr Peninsula.

Igor Andreyevich Popov, 35, a worker at the Odessa Hydrometeorological Observatory, was an aerologist at Mirnyy. He had always performed duties on the Second Soviet Antarctic Expedition.

Vasiliy Ivanovich Samushkov, 49, was a worker at the Tuapse Aerological Station. He served as an aerologist at Mirnyy. He performed his duties with great competence despite a lack of systematic training.

Aleksandr Zakharovich Smirnov, 28, a worker at the Arctic and Antarctic Scientific Research Institute, served as an aerologist. He had repeatedly participated in air expeditions aboard research aircraft.

Doctor Oldrzhik Kostka, 36, was a Czech scientist working as an aerologist at Mirnyy. In 1956 he had been named as Director of the Czechoslovakian Aerological Service. He was also a member of the Czechoslovakian Committee of the International Geophysical Year.

Hans Christian Popp, 32, was a scientist from Germany (German Democratic Republic), assigned as a meteorologist. In 1958-1959 he had participated in the Atlantic expeditions on the Soviet research vessel "Mikhail Lomonosov." ("In Memory of Lost Comrades," by V. M. Sklyarov, Meteorologiya i Gidrologiya, No. 10, 1960, pp. 59-63)

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